

1 WHAT IS CLAIMED IS

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1. A system for mobile communication based on code division multiple access, comprising:

base stations, each of which communicates with mobile stations by using a plurality of radio frequencies covering respective cells, the respective
10 cells including a first cell covered by a first radio frequency and a second cell covered by a second radio frequency; and

a base-station controller which communicates
15 with said base stations, and controls the mobile stations to switch from the first cell of a first base station to the first cell of a second base station via a soft hand-off operation and switch between the first cell and the second cell within any base station via a
20 hard hand-off operation, said base-station controller providing the mobile stations with no direct switch between the second cell of said first base station and the second cell of said second base station.

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2. The system as claimed in claim 1, wherein the first cell is larger than and fully encompasses the
30 second cell.

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3. The system as claimed in claim 2, wherein said base-station controller controls the mobile stations to switches from the first cell to the second

1 cell as the mobile stations enter the second cell, and
controls the mobile stations to switches from the
second cell to the first cell as the mobile stations
exit the second cell.

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4. The system as claimed in claim 1, wherein
10 each of said base stations transmits only the first
radio frequency when a number of the mobile stations
belonging to the first cell thereof is smaller than a
given threshold, and transmits the second radio
frequency in addition to the first radio frequency when
15 the number exceeds the given threshold, and wherein
said base-station controller controls some of the
mobile stations to switch from the first cell to the
second cell as transmission of the second radio
frequency starts.

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5. The system as claimed in claim 4, wherein
25 the respective cells further include a third cell
covered by a third frequency, and each of said base
stations does not transmit the third radio frequency
when a number of the mobile stations belonging to the
second cell thereof is smaller than another given
30 threshold, and transmits the third radio frequency in
addition to the second radio frequency when the number
exceeds said another given threshold, and wherein said
base-station controller controls some of the mobile
stations to switch from the second cell to the third
35 cell as transmission of the third radio frequency
starts.

1 6. The system as claimed in claim 4, wherein
transmission and non-transmission of the second
frequency is determined by incorporating a hysteresis
characteristic into a relation between the number of
5 the mobile stations and the given threshold.

10 7. The system as claimed in claim 4, wherein
a period of transmission and a period of non-
transmission of the second frequency is controlled to
last for at least a predetermined time period.

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 8. The system as claimed in claim 1, wherein
the respective cells further include a third cell
20 covered by a third frequency and fully encompassed by
the second cell, and wherein the mobile stations switch
from the second cell to the third cell when the mobile
stations enter the third cell.

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 9. A mobile station, comprising:
a searcher which searches for pilot signals
30 of surrounding base stations; and
a searcher-stop-control unit which stops said
searcher from searching for the pilot signals when said
mobile station is currently using a radio frequency
that does not permit a soft hand-off operation.

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10. A base-station controller used in a code-

1 division-multiple-access mobile communication system,
comprising:

first units, each of which decodes a signal
sent from a mobile station, and is provided with a
5 selection function to select said signal from two
signals that are sent from the mobile station as a
single signal and routed through two respective base
stations; and

second units, each of which decodes a signal
10 sent from a mobile station, and is not provided with
the selection function, wherein a mobile station using
a radio frequency permitting a soft hand-off operation
is assigned to one of said first units, and a mobile
station using a radio frequency not permitting a soft-
15 hand-off operation is assigned to one of said second
units.

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11. A system for mobile communication based
on code division multiple access, comprising base
stations, each of which communicates with mobile
stations by using a plurality of radio frequencies
25 covering respective cells, the respective cells
including a first cell covered by a first radio
frequency and a second cell covered by a second radio
frequency, wherein the first cell of one of said base
stations overlaps the first cell of another one of said
30 base stations while the second cell of the one of said
base stations do not overlap the second cell of said
another one of said base stations.

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12. A mobile station for use in the system of

1 claim 1, comprising a searcher which searches for pilot
signals of the base stations only with respect to the
first radio frequency.

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